Supplemental Document

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# Nicotinamide effects on the metabolism of human fibroblasts and keratinocytes assessed by quantitative, label-free fluorescence imaging: supplement

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Supplementary information

for

# Nicotinamide effects on metabolism of human fibroblasts and keratinocytes assessed by quantitative, label-free fluorescence imaging

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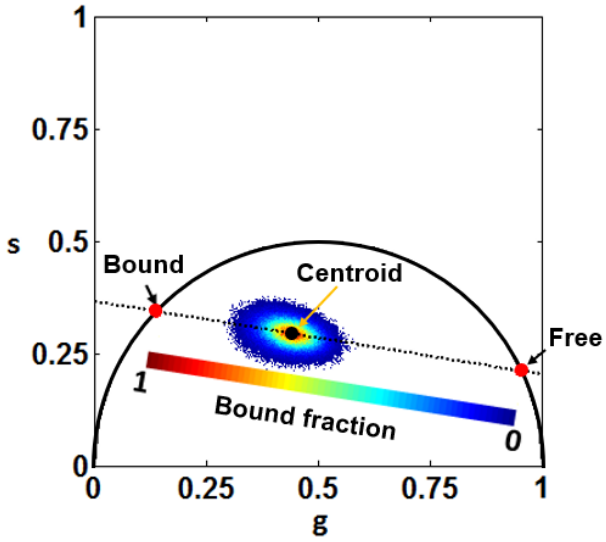


Fig. S1. Phasor plot of an NAD(P)H image, according to the fluorescence lifetime at each pixel within the cytoplasm area.

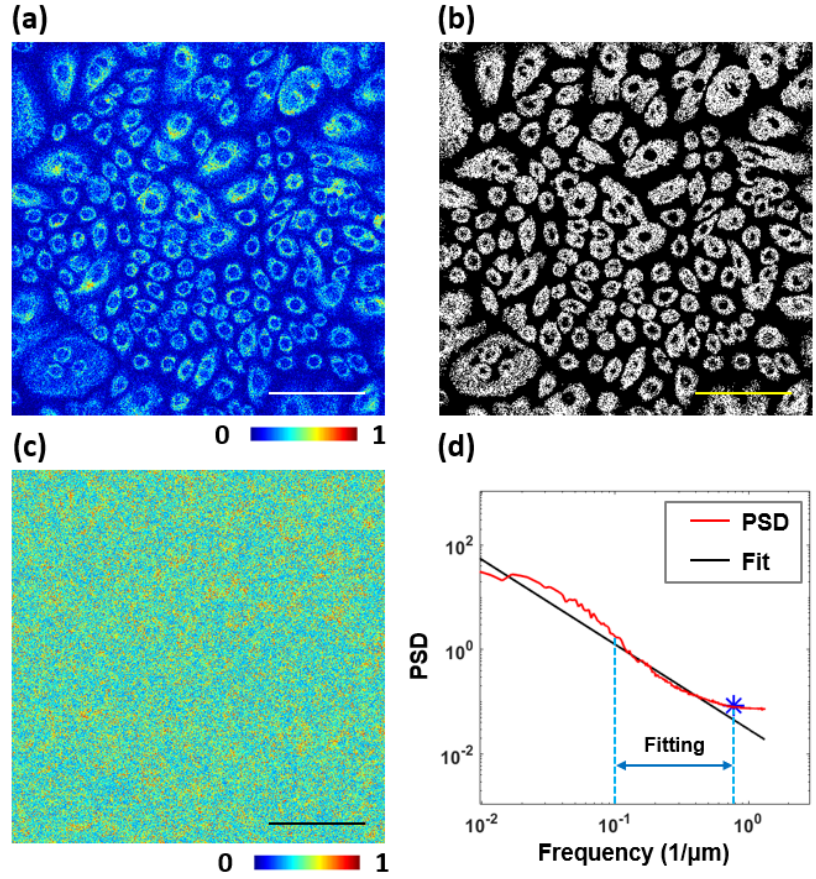


Fig. S2. Schematic showing the analysis of mitochondrial clustering. (a) Raw NAD(P)H intensity image. (b) Binary mask with cytoplasmic area only, excluding nuclear and background areas. (c) Clone stamped image of the NAD(P)H intensity signals within the binary mask. (d) PSD of the clone stamped image along with inverse power law expression fit. Scale bar: 100 μm.

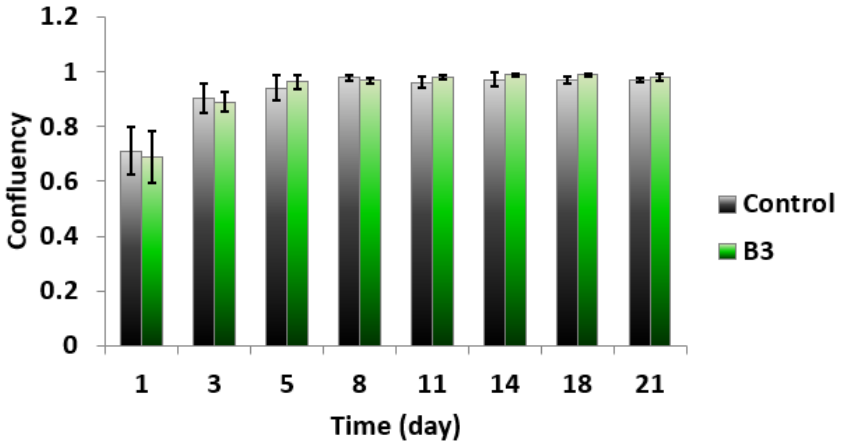


Fig. S3. Mean and standard deviation of fibroblast confluency at different time points in response to B3 supplementation.

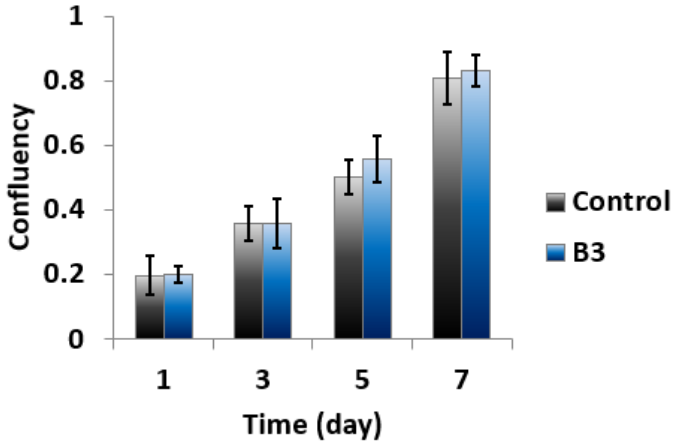


Fig. S4. Mean and standard deviation of keratinocyte confluency at different time points in response to B3 supplementation.

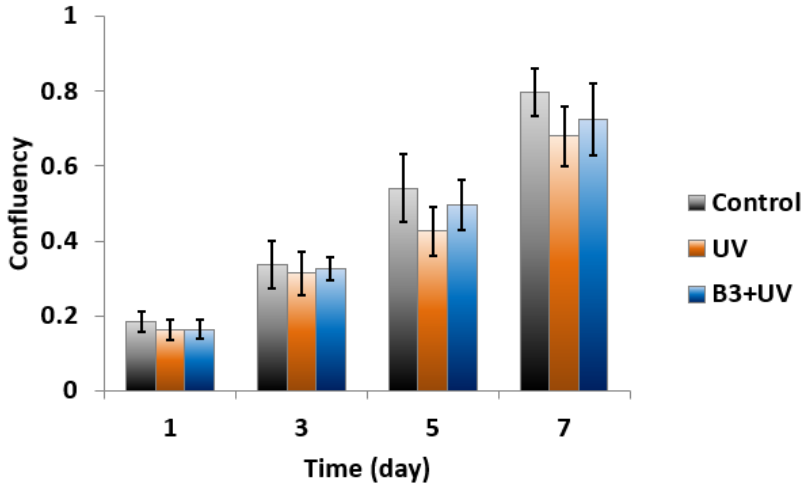


Fig. S5. Mean and standard deviation of keratinocyte confluency at different time points in response to B3 supplementation and UV irradiation (from Day 4 to Day 6).

**Table S1. Comparison of optical biomarkers at different time points relative to Day 1 for the fibroblast study.** *NS*: no significance; *, $p < 0.05$.

| Biomarker | Treatment | 3 | 5 | 8 | 11 | 14 | 18 | 21 |
|---|---|---|---|---|---|---|---|---|
| Redox ratio | Control | *NS* | *NS* | * | * | * | * | * |
| | B3 | *NS* | *NS* | *NS* | * | * | * | * |
| NAD(P)H bound fraction | Control | * | * | * | * | * | *NS* | *NS* |
| | B3 | *NS* | *NS* | * | * | * | * | * |
| Mitochondrial clustering | Control | *NS* | *NS* | * | * | * | * | * |
| | B3 | *NS* | *NS* | *NS* | * | *NS* | *NS* | *NS* |

**Table S2. Comparison of optical biomarkers at different time points relative to Day 1 for the keratinocyte study without UV exposure.** *NS*: no significance; *, $p < 0.05$.

| Biomarker | Treatment | 3 | 5 | 7 |
|---|---|---|---|---|
| Redox ratio | Control | *NS* | * | * |
| | B3 | *NS* | * | * |
| NAD(P)H bound fraction | Control | *NS* | *NS* | *NS* |
| | B3 | *NS* | *NS* | * |
| Mitochondrial clustering | Control | * | * | * |
| | B3 | * | *NS* | *NS* |

**Table S3. Comparison of optical biomarkers at different time points relative to Day 1 for the keratinocyte study with UV exposure.** *NS*: no significance; *, $p < 0.05$.

| Biomarker | Treatment | 3 | 5 | 7 |
|---|---|---|---|---|
| Redox ratio | Control | *NS* | * | * |
| | UV | * | *NS* | * |
| | B3+UV | *NS* | *NS* | *NS* |
| NAD(P)H bound fraction | Control | *NS* | *NS* | *NS* |
| | UV | *NS* | * | * |
| | B3+UV | *NS* | * | * |
| Mitochondrial clustering | Control | *NS* | *NS* | *NS* |
| | UV | *NS* | * | * |
| | B3+UV | *NS* | *NS* | *NS* |

**Table S4. Assessing differences in each optical biomarker among different treatments at distinct time points for the keratinocyte study with UV exposure.** *NS*: no significance; *, $p < 0.05$.

| Biomarker | Treatment | 1 | 3 | 5 | 7 |
|---|---|---|---|---|---|
| Redox ratio | Control *vs.* UV | *NS* | *NS* | * | * |
| | UV *vs.* B3+UV | *NS* | *NS* | * | *NS* |
| | Control *vs.* B3+UV | *NS* | *NS* | * | * |
| NAD(P)H bound fraction | Control *vs.* UV | *NS* | *NS* | * | *NS* |
| | UV *vs.* B3+UV | *NS* | *NS* | *NS* | *NS* |
| | Control *vs.* B3+UV | *NS* | *NS* | * | * |
| Mitochondrial clustering | Control *vs.* UV | *NS* | *NS* | * | * |
| | UV *vs.* B3+UV | *NS* | *NS* | *NS* | * |
| | Control *vs.* B3+UV | *NS* | *NS* | *NS* | *NS* |